

REMARKS

A. Request for Reconsideration

Applicant has carefully considered the matters raised by the Examiner in the outstanding Office Action but remains of the position that patentable subject matter is present. Applicant respectfully requests reconsideration of the Examiner's position based on the amendments to the claims and the following remarks.

B. Specification Amendments

Page 9 of the Application has been amended to correct a typographical error. Support for this amendment can be found at page 5, lines 8-10.

C. Claim Amendments

Claims 1-13 are presented in this case for further prosecution.

Claim 1 has been amended to recite that the ink-jet ink does not contain a volatile organic compound. Support for this amendment can be found at page 38, lines 1-6.

Claims 8-12 have been amended to be dependent upon claim 5. In addition, claim 13 has been amended to be dependent upon claim 12.

D. The Invention

The present invention is directed to a method for preserving an ink-jet ink and an image forming method utilizing the ink. The ink-jet ink is curable by irradiation with an active energy ray and is composed of a cationic polymerizable monomer and an initiator. In one of the novel aspects of the invention, the ink-jet ink does not contain a volatile organic compound (VOC).

The present invention has the advantage that a minute image can be formed having excellent character quality without generating color mixing.

E. Rejections under 35 USC §102(b)

Claims 1, 3, 5 and 7 have been rejected as being anticipated by Maxwell (EP 0071345). Maxwell has been cited to teach a method of preserving an ink-jet ink wherein the ink contains a cationic polymerizable monomer and an initiator with a water content of not more than 5% by weight (section 2 of the Office Action).

1. The ink-jet ink of Maxwell contains a volatile organic compound

The ink-jet ink of Maxwell is described at page 5, line 24 to page 7, line 6. Maxwell explains that the ink

contains a volatile solvent at ambient conditions (page 6, line 3 and page 7, line 5). The ink of Maxwell therefore contains a volatile organic compound in contrast to the requirements of the present invention.

It is respectfully submitted that Maxwell does not anticipate the present invention as recited in amended claim 1.

2. The preserved ink-jet ink of the present invention not containing a VOC is superior to the ink of Maxwell containing a VOC

As discussed in section 1 above, the ink-jet ink of the present invention differs from Maxwell due to the absence of a VOC. As explained at page 38, lines 1-6 of the application, problems are caused when a VOC remains on the cured image. The Applicant, Mr. Takabayashi, has performed test data in order to demonstrate the criticality of the presence of a VOC. This data is enclosed in Declaration form.

Mr. Takabayashi prepared two ink compositions: Comparative Ink A prepared in accordance with Example 4 of Maxwell, and Inventive Ink B prepared in accordance with the present invention. The Examiner will recall that Example 4 of Maxwell had been specifically cited to teach

the ink of the present invention (see section 2 of the Office Action). Comparative Ink A contained VOC's (see page 34 of Maxwell), while Inventive Ink B contained no VOC's.

Comparative Ink A and Inventive Ink B were stored in accordance with the requirements of the present invention and were subsequently jetted onto various types of recording materials. The jetted images were evaluated for character quality. The results of these evaluations are illustrated in Table 4 of the Declaration.

Table 4 demonstrates that Inventive Ink B prepared in accordance with the present invention was superior to Comparative Ink A in 11 out of the 12 total evaluations. For example, at 25°C and 50% RH when using the PET recording material (Condition Nos. 49 and 53), roughness was observed (C) after jetting Comparative Ink A, while no roughness was observed (A) after jetting Inventive Ink B. Similar results were obtained in each of the other comparison situations, except for one comparison situation where Comparative Ink A equaled the performance of Inventive Ink B (comparison between Condition Nos. 52 and 56 at 10°C and 20% RH). Table 4 therefore demonstrates the superiority of the ink-jet ink of the present invention having no VOC's.

It is respectfully submitted that Mr. Takabayashi has demonstrated the superiority of the preservation method of the present invention.

F. Rejections under 35 USC §103(a)

Claims 2, 4, 6, 11 and 12 have been rejected as being unpatentable over Maxwell in view of Takami (US 5,721,020). Takami has been cited to teach the oxetane compound of the present invention and a method of forming an image using this compound. Maxwell has been discussed above.

Claims 2, 4, 6, 11 and 12 are each ultimately dependent upon claim 1. Takami does not teach an ink-jet having no VOC's as recited in claim 1. Thus, a combination of Maxwell and Takami does not teach or suggest the present invention.

It is submitted that the present invention is patentable over a combination of Maxwell and Takami.

G. Claim Objections

Claims 8-13 had been objected to for being improper dependent claims. Applicant has amended claims 8-12 to be dependent upon claim 5 instead of claim 4. Claim 13 has also been amended to be dependent upon claim 12 instead of claim 9.

It is submitted that claims 8-13 are now in proper dependent form.

H. Conclusion

In view of the foregoing and the enclosed, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any extensions of time or fees be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit Account # 02-2275.

Respectfully submitted,

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DCL/mr

Encl: Executed Declaration of Mr. Takabayashi  
Return receipt post-card